

Application No.: 09/436,637

Docket No.: 21776-00044-US

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions and listings:

1. (Previously Presented) A chemical supply system for supplying a mixture solution to a chemical treatment chamber, wherein said mixture solution includes a liquid chemical mixed and diluted with a solvent, said chemical supply system comprising:
 - at least one chemical reservoir that is easy to carry, wherein said liquid chemical is stored in said chemical reservoir at a high concentration;
 - a piping system in which said solvent flows, wherein said piping system includes a discharge portion for said mixture solution at an end portion thereof; and
 - a chemical supply means for feeding out a predetermined quantity of said liquid chemical from said chemical reservoir into a connecting pipe;
 - a chemical discharging means connecting said connecting pipe to said piping system and arranged to discharge said liquid chemical from said connecting pipe into said solvent in the piping system at a linear velocity that is significantly greater than a linear velocity of said solvent to produce said mixture solution at a described uniform concentration.
2. (Previously Presented) The chemical supply system of claim 1, wherein:
 - said chemical supply means is a chemical supply pump including a flow passage for passing a predetermined liquid chemical;
 - a suction valve which is closed by a pressure rise of said liquid chemical is provided at a flowing-in port of said flow passage, and a discharge valve which is closed by a pressure fall of said liquid chemical is provided at a flowing-out port of said flow passage;
 - said flow passage includes a liquid contact surface, at least part of is made of a compact member with non-permeability and a high anti-corrosion property with respect to said liquid chemical, part of said compact member being made into a movable wall; and
 - a shaker is connected to said movable wall, said movable wall being oscillated in a direction substantially perpendicular to a surface of the movable wall by driving said shaker to periodically change the volume of said flow passage.

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3. (Previously Presented) The chemical supply system of claim 1, wherein said chemical supply means comprises:

a first pump for feeding out said liquid chemical from said chemical reservoir, and
a second pump for storing said liquid chemical fed out from said first pump and
supplying a predetermined quantity of said liquid chemical to said piping system by applying a
predetermined pressure to said liquid chemical for a predetermined time.

4. (Previously Presented) The chemical supply system of claim 3, wherein said second pump comprises:

a chemical storage means in which said liquid chemical is stored;
a pressure control means for performing pressure control by feeding a gas to said liquid
chemical in said chemical storage means; and
a liquid level measurement means for measuring a change in liquid quantity of said liquid
chemical in said chemical storage means, wherein said pressure control means is controlled on
the basis of a measurement result of said liquid level measurement means, and wherein a
predetermined quantity of said liquid chemical is supplied to said piping system.

5. (Previously Presented) The chemical supply system of claim 1, wherein said chemical supply means is a pump, said chemical supply system further comprising a cooling means for cooling an interior of said pump and an interior of a piping portion between said chemical reservoir and said pump relative to a temperature of the liquid chemical.

6. (Previously Presented) The chemical supply system of claim 3, wherein said shaker is controlled such that the absolute value of a negative pressure at the time of sucking said liquid chemical in one period of oscillation is as small as possible and suction time is longer than discharge time when said shaker oscillates and drives said movable wall.

7. (Previously Presented) The chemical supply system of claim 1, further comprising a degassing tube disposed between said chemical reservoir and said chemical supply means, wherein said degassing tube includes a surface layer that is a degassing membrane, wherein said

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liquid chemical is passed through said degassing tube in a state that an external pressure of said degassing tube is lower than an internal pressure of said degassing tube, and degassing of said liquid chemical is performed.

8. (Previously Presented) The chemical supply system of claim 1, wherein said chemical discharging means comprises a capillary disposed in said connecting pipe.

9. (Previously Presented) The chemical supply system of claim 1, further comprising a control system for regulating said mixture solution supplied from said discharge portion.

10. (Previously Presented) The chemical supply system of claim 9, further comprising:

a flow rate regulation means for regulating a flow rate of said solvent or said liquid chemical passing through said piping system;

a concentration regulation means for regulating a concentration of said mixture solution passing through said piping system; wherein said control system has a chemical supply control means for regulating a supply quantity of said liquid chemical to said solvent of said chemical supply means, wherein said control system has a concentration control means for driving said concentration regulation means, wherein said chemical supply control means drives said flow rate regulation means, wherein said chemical supply control means and said concentration control means are connected, and wherein a result of concentration control by said concentration control means is fed back to said chemical supply control means to regulate the supply quantity of said liquid chemical.

11. (Previously Presented) The chemical supply system of claim 1, further comprising a mixing means for producing a rotational flow in said mixture solution to stir and uniformize said mixture solution;

wherein said mixing means has a spiral pitch in a flow passage for said mixture solution, and a rotational flow is produced by said mixture solution passing through said pitch.

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12. (Previously Presented) The chemical supply system of claim 1, further comprising a mixing means for producing a rotational flow in said mixture solution to stir and uniformize said mixture solution;

wherein said mixing means includes a flowing-in portion and a flowing-out portion that are slightly offset.

13. (Previously Presented) The chemical supply system of claim 1, wherein:
said chemical reservoir includes a main reservoir in which a sufficient quantity of said liquid chemical is stored, and an auxiliary reservoir connected to said main reservoir and to which only a necessary quantity of said liquid chemical is supplied from said main reservoir; and
said auxiliary reservoir has a liquid surface level regulation means for regulating a liquid surface level of said liquid chemical supplied to control a chemical quantity in said chemical reservoir.

14. (Previously Presented) The chemical supply system of claim 1, wherein said liquid surface level regulation means comprises a pair of bar-like sensors made of conductive members, and wherein said liquid surface level regulation means calculates said liquid surface level and a changing speed thereof by measuring an electrostatic capacity of portions of said bar-like sensors dipped in said liquid chemical and a change of said electrostatic capacity over time.

15. (Previously Presented) The chemical supply system of claim 1, further comprising:

a connecting flow passage connecting said piping system and said chemical supply means;

a connecting tube branching from a portion of said piping system upstream of said connecting flow passage, wherein said connecting tube is connected to said chemical supply means to form a closed system, and wherein said solvent flows in said closed system to defoam

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when said chemical reservoir is unused.

16-63 (canceled)